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CURRENT SUPPORT BRIEF

THE OUTLOOK FOR THE STEEL INDUSTRY OF THE USSR - 1961-80

OFFICE OF RESEARCH AND REPORTS

CENTRAL INTELLIGENCE AGENCY

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THE OUTLOOK FOR THE STEEL INDUSTRY OF THE USSR - 1961-80

Soviet long-range plans for ferrous metallurgy, as outlined in the Draft Party Program published on 30 July, envisage an annual rate of production of crude steel in 1980 of about 250 million tons --3.8 times the 1960 output. The implied growth rate of almost seven percent a year during 1961-80 is midway between the high and low rates of increase indicated in the Seven-Year Plan (1959-65), and would result in increases in output averaging 9.25 million tons a year for the entire twenty years--but up to 16 million tons annually during the second decade. (See Table 1 on page 6)

The Twenty-Year Program indicates some increase in optimism over earlier forecasts concerning the rate at which the USSR can increase its production (and consumption and exports) of steel over a long-range period. Khrushchev late in 1957 announced fifteen year goals which, formulated at a time when the increase in steel production was the smallest since immediately after World War II, anticipated a growth rate of only 4.6 to 5.8 percent. A short time earlier I. P. Bardin and other technical experts had forecasted a steel target for 1970 which implied a 6.7 percent growth rate. Early in 1960 the Soviet Deputy Minister of Power Station Construction projected a 1980 steel goal of 200 million tons--a 5.8 percent growth rate.

The announced Twenty Year Program and succeeding Soviet commentary have not as yet revealed the production targets for iron and steelmaking raw materials or for rolled steel. Based on the relationships between iron ore, pig iron, crude steel, and rolled steel which the Bardin group projected for 1970, production of 250 million tons of crude steel in 1980 would be accompanied by production of approximately 800 million tons of crude iron ore, 440 million tons of usable ore, 200 million tons of pig iron, and 190 million tons of rolled steel. Except for the production of crude ore, these amounts are not significantly different from those calculated on the basis of ratios implied by the Seven-Year Plan goals for 1965, but in either case, are tenuous and at best can only indicate a possible order of magnitude.

There are obvious difficulties in expanding capacity and output to the levels indicated for 1980. The program would require substantially increased capabilities on the part of the metallurgical equipment and construction industries, as well as the producers of instruments, controls, and other highly specialized equipment required to achieve the high levels of mechanization and automation the program implies. Moreover, considerable improvement in planning and coordination would be essential to sustaining, over a long period, the rate of increase in steel production projected for 1961-80.

Achievement of the goal would seem to depend, essentially, upon the willingness of the Communist regime to devote the large amounts of capital and other resources the program would absorb. There are strong incentives to do so--the contributions such a steel expansion program could make to the rising standard of living being promised Soviet consumers, to the economic and military strength of the USSR and the Sino-Soviet Bloc, and to Communist prestige in uncommitted Free World countries should Soviet steel

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production--as is possible--surpass that in the US at some time before 1980. However, the possibility that the USSR may be producing as much as 250 million tons of steel annually in 1980 may prove to be less significant than the probability that the steel production will be obtained from an industry consisting to a large extent of relatively new production units embodying modern technology comparing favorably to that in any other country.

The Soviet Union has sufficient reserves of raw materials resources to support an increase in steel production to the level indicated for 1980. Proven reserves of iron ore at the beginning of 1960 were estimated at 43 billion tons, with an average iron content of about 37 percent.1/ The relative scarcity of reserves of high-quality coking coal probably will continue to present problems but this impact will be minimized by technical developments reducing the coke consumption rate. Reserves of other basic raw materials and of most alloying materials probably are sufficiently large to support the steel program.

If raw materials problems arise, they are more likely to result from difficulties in constructing the large amounts of mining and concentrating capacity that will be required. To increase production of crude and usable iron ore to the levels indicated for 1980, and assuming that as much new mining and concentrating capacity will have to be built, per ton of increase in output of crude and usable ore, as is planned for 1959-65, an average of about 50 million tons of additional ore mining capacity and 30 million tons of usable ore capacity a year will be needed during 1961-80. These compare with nearly 30 million tons and 18 million tons a year, respectively, planned for 1959-65. Annual data are not available for usable ore but the industry commissioned 30 million tons of ore mining capacity in 1960 and the plan for 1961 is 40 million tons.

In their long-range plans for ferrous metallurgy, Soviet planners clearly are relying on continuing technical advances to provide not only significant increases in capacity and output but also a means of holding down the capital and other inputs required per ton of output. The planners' thinking, in this respect, may be indicated by recent estimates for 1959-65 prepared by the Ferrous Metals Section of the State Planning Committee (Gosplan). This group estimates that production of crude steel in 1965 will amount to 96 million tons 2/--and possibly to almost 100 million tons 3/--as compared with 86 million to 91 million tons in the Seven-Year Plan.

These Gosplan data (See Table 2 on page 7) reveal not only the amount of production expected from new units but also the significant increases in output, particularly of pig iron and crude steel, the planners now believe will be obtained during 1959-65 from technical improvements, and higher production rates, of existing units. In the case of crude steel, for example, increased production of existing units is estimated at 14 to 16 million tons 4/ or 50 percent of the amount expected from new steelmaking capacity that will be built by 1965. The data also indicate that improvements in existing rolling mill capacity are expected to account for a smaller proportion of the increase in output than is anticipated for blast furnaces and steelmaking units. In the rolling mill segment, obsolete capacity to be retired (about three million tons)5/ is a

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larger proportion of gross additions to capacity than in the blast furnace and steelmaking segments.

The relative importance of new capacity--whether built at new or existing plants--and of higher production rates of existing units during the current Seven-Year Plan is not necessarily indicative of trends over the next twenty years. However, assuming that the Gosplan estimates based on current experience may provide some indication of prospects through 1980, a gross increase in production of crude steel of about 195 million tons could be expected--of which 130 million tons would result from the construction of new capacity and 65 million tons from improvements of existing units. The gross increase would permit the retirement of about ten million tons of obsolete capacity. On an annual basis, new construction would provide 6.5 million tons of capacity, improvements of existing units 3.25 million tons, and an average of about 500,000 tons of obsolete capacity would be retired.

There is considerable evidence that in its efforts to raise the industry-wide level of efficiency of iron and steel plants the USSR is eliminating obsolete capacity located in otherwise efficient plants and is undertaking to close out a number of small, high-cost plants located for the most part in the Urals.6/ The major expansion of capacity appears to be in a relatively few plants, favorably located with respect to raw materials and either present or planned consuming markets.

Total investment in ferrous metallurgy during 1959-65, when related to the amount of steelmaking capacity to be put in operation, is estimated by Gosplan at 285.2 (new) rubles per ton 7/--which is about the same as the 283.8 (new) rubles per ton estimated early in 1959 8/ but is substantially less than the average of 328.5 (new) rubles 9/ in 1952-58. Assuming requirements during 1961-80 comparable to those now expected in 1959-65, investment on the order of 56.0 billion (new) rubles could be absorbed in ferrous metallurgy during the twenty-year period or an average of 2.8 billion rubles a year. Investment amounted to 1.25 billion (new) rubles in 1960 and is planned at 1.64 billion (new) rubles in 1961.10/

The long-range plans for technical development of the ferrous metals industry include not only the extensive application of automation techniques and of mechanized materials handling throughout the ferrous metals industry but also the construction of a fully automated steel plant capable of producing 20 million to 25 million tons of crude steel annually.11/ The general plans for such a plant, which appeared in a Soviet technical journal in November 1960,12/ provide for open hearth furnaces of up to 1,000-tons in capacity, for 300-ton converters, 3,000-cubic meter blast furnaces, and for rolling mills with annual capacities of three million to ten million tons. A variation would replace blast furnaces and open hearths with a direct reduction process. Soviet reports do not claim that construction of such a plant will be completed by 1980 but suggest that the "first stage" of its development may be reached. Because of the considerable propaganda value that could accrue from launching such a plant, it is not unlikely that the intial stages of its construction may be undertaken during the twenty-year period.

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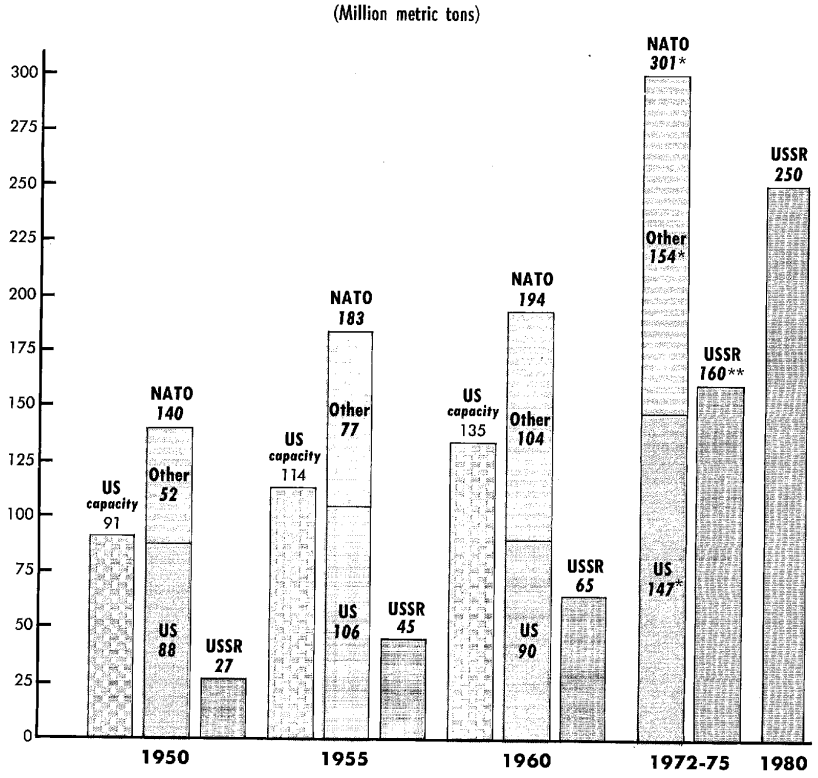
The growth rate projected for Soviet production of steel during 1961-80 could enable the USSR to raise its production to a level exceeding that in the US, although future trends in output in the US and other free economies necessarily are highly speculative. In 1960, Soviet production of 65.3 million tons of crude steel equaled 72 percent of US output of 90.1 million tons and 63 percent of the 104 million tons produced in NATO countries other than the US.

Crude Steel Production, U.S., other NATO countries, and USSR



*As projected by United Nations, Economic Commission for Europe.[20]

**Average production assuming 7 percent growth rate.

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Table 1

Long-Range Targets for Steel Production, USSR

Source of Projection	Date of Forecast	Production Target (Million Metric Tons) Year	Production Target (Million Metric Tons)	Average Annual Increases Required (Million Metric Tons)	Average Annual Increases Required (Percent)	Production in 1980 if Extended at Annual Rate (Million Metric Tons)
Bardin Group a/	1957	1970	120	5.00	6.7	235
Khrushchev Long-Term Goal b/	Late 1957	1972	100 to 120	3.24 to 4.44	4.6 to 5.8	143 to 190
Seven-Year Plan c/	1958	1965	86 to 91	4.44 to 5.16	6.6 to 7.5	240 to 290
Deputy Minister Electric Power Station Construction d/	March 1960	1980	200	6.67	5.8	200
Twenty-Year Program e/	July 1961	1980	250	9.25	6.95	250

a. 13/
b. 14/
c. 15/
d. 16/
e. 17/

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Table 2

USSR: Estimated Increases in Production, by Source, 1959-65 a/ and 1961-80 b/
Million Metric Tons

Sources	Pig Iron		Crude Steel		Rolled Steel	
	1959-65	1961-80	1959-65	1961-80 c/	1959-65	1961-80
Production, base year d/	39.6	47	55	65	43.1	65
Add production from:						
New units commissioned	24.5	120	28 to 30	130	25.2	105
Capital repairs, existing units	1.2	6)	14 to 16	65	7.6	32
Increased efficiency, old units	7.2	35)				
Other e/	2.9	4	-	-	-	-
Less Retirement, obsolete units	2.9	12	2	10	3.0	12
Estimated production, final year f/	72.5	200	95 to 99	250	72.9	190

a. Gosplan estimates as of last half of 1960.18/
b. Amounts shown for 1961-80 are valid only as indicators of the possible structure of increases in production during the period, assuming that production in 1980 is at the levels shown and that the various sources of increases in production have the same relative importance in 1961-80 as in 1959-65.
c. Amounts shown are based on relationships of the lesser amounts in the ranges estimated for 1959-65.
d. Base years are 1958 and 1960.
e. Designated in Gosplan report as the first full-year's production from blast furnaces put in operation in 1958.
f. The estimates of production in 1965 shown here are higher than the Seven-Year Plan goals which were as follows: Pig iron and rolled steel, 65 to 70 million tons each, and crude steel 86 to 91 million tons.

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Sources:

1. Estimated on basis of data on individual deposits contained in a number of sources, principally Braun, G. A. and Pokrovskiy, M. A., Razvitiye zhelezorudnoy promyshlennosti SSSR v 1959-65 godu, Moscow 1960. U., Gornyy Zhurnal, Nos 5 and 8, 1960, No. 5, 1961. U., Bardin, et. al., Source 13 below, and Serdyuchenko, D. P. et. al., Zheleznyye rudy Yuzhonoy Yakutii, Moscow, 1960. U.
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4. Ibid.
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14. STATSPEC [redacted]
15. [redacted]
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19. UN. ECE, Long-Term Trends and Problems of the European Steel Industry, Geneva, 1959, p. 141. U.

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